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2010–2011 Minerals Yearbook

COLORADO [ADVANCE RELEASE]

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U.S. Geological Survey

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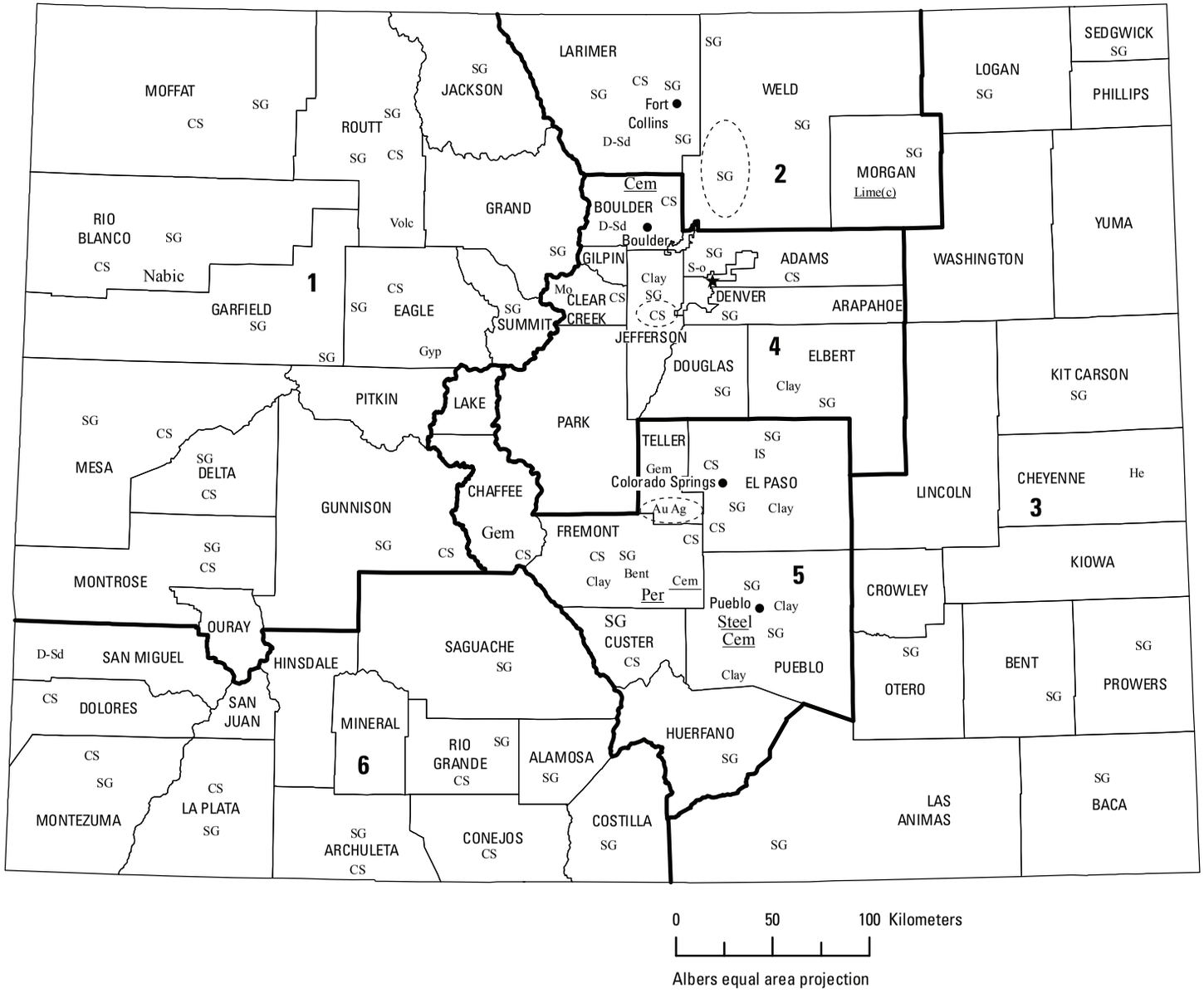
COLORADO



LEGEND

- County boundary
- ★ Capital
- ● City
- 1 Crushed stone/sand and gravel district boundary

MINERAL SYMBOLS
(Principal producing areas)

Ag	Silver
Au	Gold
Bent	Bentonite
Cem	Cement plant
Clay	Common clay
CS	Crushed stone
D-Sd	Dimension sandstone
Gem	Gemstones
Gyp	Gypsum
He	Helium
IS	Industrial sand
Lime(c)	Lime plant (captive)
Mo	Molybdenum
Nabic	Sodium bicarbonate
Per	Perlite plant
S-o	Sulfur (oil)
SG	Construction sand and gravel
Steel	Steel plant
Volc	Vocanic cinder

Concentration of mineral operations

Source: Colorado Geological Survey/U.S. Geological Survey (2010–11).

The Mineral Industry of Colorado

This chapter has been prepared under a Memorandum of Understanding between the U.S. Geological Survey and the Colorado Geological Survey for collecting information on all nonfuel minerals.

In 2011, Colorado's nonfuel mineral production[1] was valued at $1.93 billion, based upon annual U.S. Geological Survey (USGS) data. This was a nearly $85 million (4.6%) increase from the State's total nonfuel mineral value of $1.85 billion in 2010, which followed more than a $430 million (30%) increase from the State's total nonfuel mineral value of $1.42 billion in 2009. The State ranked 12th in both 2010 and 2011, and 13th in 2009, among the 50 States in total nonfuel mineral production value. Colorado accounted for about 2.6% of the U.S. total nonfuel mineral production value in 2011, and 2.8% in 2010. On a per capita basis, Colorado also ranked 12th in the Nation in nonfuel mineral production in 2011 with a value of $377, over 1.5 times the national average of $240.

The State's leading nonfuel mineral commodities in 2010 and 2011 were, in descending order of production value, molybdenum concentrates, gold, construction sand and gravel, portland cement, and crushed stone. These five commodities together accounted for 99% of the State's total nonfuel mineral production value in both 2011 and 2010. Molybdenum concentrates and construction sand and gravel had been the State's two leading mineral commodities from 2004 to 2009, when gold increased from third to second. Prior to 2004, industrial mineral mining made up the majority of the State's nonfuel mineral total production value.

Compared to 2009, the production value of molybdenum ores and concentrates was up by nearly 45% through 2011, portland cement increased by about 10%, gold by over 95%, and silver by 140% (actual values withheld—proprietary company data). The increases in quantity of molybdenum concentrates and portland cement directly mirror their increases in production value through 2011, while the quantity of gold increased by only 22% and the quantity of silver produced remained at 2009 levels. The production values of crude gypsum, helium, and masonry cement fluctuated between 2009 and 2011, but each averaged about a 20% decrease through 2011. Decreases took place in the production values and quantities of both crushed stone, down $759,000 and 22,000 metric tons (t), and dimension stone, down $970,000 and 5,000 t, with respect to 2009.

Over 76% of Colorado's nonfuel mineral production value in both 2010 and 2011 resulted from the production of metals—molybdenum concentrates, gold, and silver—in descending order of value, an increase of 67% in 2009. Since 2002, metals had accounted for an increasingly larger percentage of the total nonfuel mineral production value for the State—less than 30% in 2002 and 2003, 50% in 2004, and between 60 to 70% in 2005 through 2008. This trend was primarily the result of significantly higher average annual prices of molybdenum concentrates. Substantial rises in gold prices contributed about 30% from 2010 to 2011 to the total increase in the State's total production value.

In 2011, Colorado was first in the production of molybdenum for the fifth consecutive year among the seven molybdenum-producing States, and ranked fourth in the quantity of gold produced for the eighth consecutive year among the 10 gold-producing States. In gemstone production value, the State declined to ninth from eighth, and was down from sixth in 2009. Colorado ranked fourth out of the four States in the production of Grade-A helium in 2011.

[1]The terms "nonfuel mineral production" and related "values" encompass variations in meaning, depending upon the mineral products. Production may be measured by mine shipments, mineral commodity sales, or marketable production (including consumption by producers) as is applicable to the individual mineral commodity.

All USGS mineral production data published in this chapter are those available as of May 2013. Data in this report are rounded to three significant digits and percentages are calculated from unrounded data. All USGS Mineral Industry Surveys and USGS Minerals Yearbook chapters—mineral commodity, State, and country—can be retrieved over the Internet at http://minerals.usgs.gov/minerals.

TABLE 1
NONFUEL MINERAL PRODUCTION IN COLORADO[1, 2]

(Thousand metric tons and thousand dollars)

Mineral	2009		2010		2011	
	Quantity	Value	Quantity	Value	Quantity	Value
Clays:						
Bentonite	1	30	W	W	W	W
Common	60	405	109	352	123	293
Gemstones, natural	NA	426	NA	431	NA	440
Sand and gravel, construction	29,400 r	218,000 r	28,900	209,000	27,100	198,000
Stone:						
Crushed	6,780 r	61,600 r	6,220	49,000	6,200	48,200
Dimension	11	3,110	10	1,960	5	994
Combined values of cement, clays [fire (2009, 2011)], gold, gypsum (crude), helium (Grade-A), lime, molybdenum concentrates, sand and gravel (industrial), silver, and values indicated by symbol W	XX	1,130,000	XX	1,590,000	XX	1,680,000
Total	XX	1,420,000	XX	1,850,000	XX	1,930,000

rRevised. NA Not available. W Withheld to avoid disclosing company proprietary data. Withheld values included in "Combined values" data. XX not applicable.
[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).
[2]Data are rounded to no more than three significant digits; may not add to totals shown.

TABLE 2
COLORADO: CRUSHED STONE SOLD OR USED IN THE UNITED STATES, BY TYPE[1]

	2009				2010				2011			
Type	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value	Number of quarries	Quantity (thousand metric tons)	Value (thousands)	Unit value
Limestone[2]	7	497 r	$5,200	$10.47	4	361	$3,470	$9.61	4	414	$3,750	$9.05
Dolomite	--	--	--	--	2	46	577	12.56	1	23	179	7.79
Marble	--	--	--	--	1	71	534	7.55	1	89	694	7.79
Granite	18	4,380 r	32,800	7.49	12	4,780	38,500	8.05	12	4,430	33,200	7.50
Traprock	--	--	--	--	1	25	160	6.30	1	3	19	6.29
Sandstone and quartzite[3]	5	1,040	8,570	8.23	4	84	608	7.25	4	81	572	7.08
Miscellaneous stone	19	881 r	15,600	17.70	22	852	5,140	6.02	222	1,160	9,800	8.46
Total or average	XX	6,780	61,600	9.14	XX	6,220	49,000	7.87	XX	6,200	48,200	7.78

rRevised. XX Not applicable.
[1]Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.
[2]Includes limestone-dolomite reported with no distinction between the two kinds of stone.
[3]Includes sandstone-quartzite reported with no distinction between the two kinds of stone.

TABLE 3
COLORADO: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 2010, BY USE[1]

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Riprap and jetty stone	295	$4,120
Filter stone	5	56
Other coarse aggregate	W	W
Coarse aggregate, graded:		
Concrete aggregate, coarse	167	1,910
Bituminous aggregate, coarse	1,210	10,600
Railroad ballast	15	231
Fine aggregate (-⅜ inch):		
Stone sand, concrete	3	44
Stone sand, bituminous mix or seal	W	W
Screening, undesignated	99	229
Coarse and fine aggregates:		
Graded road base or subbase	626	3,030
Unpaved road surface	W	W
Terrazzo and exposed aggregate	W	W
Crusher run or fill or waste	154	140
Other coarse and fine aggregates	4	12
Other construction materials	W	W
Chemical and metallurgical, lime manufacture	32	237
Special, mining dusting or acid water treatment	W	W
Other miscellaneous uses and specified uses not listed	W	W
Unspecified:[2]		
Reported	1,960	15,800
Estimated	2,260	18,500
Total	6,220	49,000

W Withheld to avoid disclosing company proprietary data; included in "Total."
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Reported and estimated production without a breakdown by end use.

TABLE 4
COLORADO: CRUSHED STONE SOLD OR USED BY PRODUCERS
IN 2011, BY USE[1]

(Thousand metric tons and thousand dollars)

Use	Quantity	Value
Construction:		
Coarse aggregate (+1½ inch):		
Riprap and jetty stone	194	3,080
Filter stone	W	W
Unspecified coarse aggregate	W	W
Coarse aggregate, graded:		
Concrete aggregate, coarse	W	W
Bituminous aggregate, coarse	1,280	13,300
Fine aggregate (-⅜ inch):		
Stone sand, concrete	W	W
Stone sand, bituminous mix or seal	W	W
Screening, undesignated	402	1,380
Unspecified fine aggregate	W	W
Coarse and fine aggregates:		
Graded road base or subbase	603	2,430
Terrazzo and exposed aggregate	W	W
Crusher run or fill or waste	424	246
Unspecified coarse and fine aggregates	W	W
Unspecified and other construction materials	W	W
Chemical and metallurgical, sulfur oxide removal	41	319
Special, mining dusting or acid water treatment	W	W
Other miscellaneous uses and specified uses not listed	305	2,240
Unspecified:[2]		
Reported	1,040	8,390
Estimated	1,020	7,960
Total	6,200	48,200

W Withheld to avoid disclosing company proprietary data; included in "Total."
[1]Data are rounded to no more than three significant digits.
[2]Reported and estimated production without a breakdown by end use.

TABLE 5
COLORADO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2010, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch)[2]	15	$196	--	--	W	W
Coarse aggregate, graded[3]	10	120	--	--	W	W
Fine aggregate (-⅜ inch)[4]	3	44	--	--	--	--
Coarse and fine aggregates[5]	352	1,680	W	W	W	W
Other construction materials	--	--	--	--	--	--
Chemical and metallurgical[6]	32	237	--	--	--	--
Special[7]	--	--	--	--	--	--
Other miscellaneous uses and specified uses not listed[8]	45	761	--	--	--	--
Unspecified:[9]						
Reported	7	53	--	--	W	W
Estimated	6	48	W	W	1,660	$12,500
Total[10]	469	3,140	170	$1,290	5,100	41,900

Use	District 5		District 6		Unspecified District	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:					--	--
Coarse aggregate (+1½ inch)[2]	W	W	--	--	--	--
Coarse aggregate, graded[3]	W	W	--	--	14	$45
Fine aggregate (-⅜ inch)[4]	240	$1,100	--	--	--	--
Coarse and fine aggregates[5]	245	1,380	25	$160	--	--
Other construction materials	W	W	--	--	--	--
Chemical and metallurgical[6]	--	--	--	--	--	--
Special[7]	W	W	--	--	--	--
Other miscellaneous uses and specified uses not listed[8]	--	--	--	--	--	--
Unspecified:[9]						
Reported	2	14	13	99	24	25
Estimated	W	W	2	17	38	70
Total[10]	1,500	11,700	41	276	38	70

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes macadam, riprap and jetty stone, filter stone, and other coarse aggregates.
[3]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregates.
[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.
[5]Includes graded road base or subbase, unpaved road surface, terrazzo and exposed aggregate, crusher run, roofing granules, and other coarse and fine aggregates.
[6]Includes cement manufacture, lime manufacture, dead-burned dolomite manufacture, flux stone, chemical stone, glass manufacture, and sulfur oxide removal.
[7]Includes mine dusting or acid water treatment, whiting or whitening substance, and other fillers or extenders.
[8]Includes drain fields, waste material, lightweight aggregate (slate), pipe bedding, refractory stone (including ganister), and other miscellaneous uses.
[9]Reported and estimated production without a breakdown by end use.
[10]District totals may not add up to the published State total, owing to revisions made after the production of the table and/or proprietary data being withheld.

TABLE 6
COLORADO: CRUSHED STONE SOLD OR USED BY PRODUCERS IN 2011, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 4	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch)[2]	W	W	--	--	W	W
Coarse aggregate, graded[3]	--	--	--	--	W	W
Fine aggregate (-⅜ inch)[4]	--	--	--	--	W	W
Coarse and fine aggregates[5]	W	W	--	--	W	W
Other construction materials	W	W	--	--	--	--
Chemical and metallurgical[6]	W	W	--	--	--	--
Special[7]	--	--	--	--	--	--
Other miscellaneous uses and specified uses not listed[8]	W	W	--	--	W	W
Unspecified:[9]						
Reported	1	10	--	--	1,020	8,350
Estimated	140	1,150	166	1,290	423	3,290
Total	521	3,540	166	1,290	4,460	37,800

Use	District 5		District 6		Unspecified District	
	Quantity	Value	Quantity	Value	Quantity	Value
Construction:						
Coarse aggregate (+1½ inch)[2]	W	W	W	W	--	--
Coarse aggregate, graded[3]	W	W	--	--	--	--
Fine aggregate (-⅜ inch)[4]	W	W	W	W	--	--
Coarse and fine aggregates[5]	W	W	W	W	--	--
Other construction materials	--	--	--	--	--	--
Chemical and metallurgical[6]	--	--	--	--	--	--
Special[7]	W	W	--	--	--	--
Other miscellaneous uses and specified uses not listed[8]	W	W	--	--	--	--
Unspecified:[9]						
Reported	--	--	--	--	15	32
Estimated	284	2,210	2	19	--	--
Total	1,020	5,420	18	96	15	32

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.

[1]Data are rounded to no more than three significant digits.

[2]Includes macadam, riprap and jetty stone, filter stone, and other coarse aggregates.

[3]Includes concrete aggregate (coarse), bituminous aggregate (coarse), bituminous surface-treatment aggregate, railroad ballast, and other graded coarse aggregates.

[4]Includes stone sand (concrete), stone sand (bituminous mix or seal), screening (undesignated), and other fine aggregate.

[5]Includes graded road base or subbase, unpaved road surface, terrazzo and exposed aggregate, crusher run, roofing granules, and other coarse and fine aggregates.

[6]Includes cement manufacture, lime manufacture, dead-burned dolomite manufacture, flux stone, chemical stone, glass manufacture, and sulfur oxide removal.

[7]Includes mine dusting or acid water treatment, whiting or whitening substance, and other fillers or extenders.

[8]Includes drain fields, waste material, lightweight aggregate (slate), pipe bedding, refractory stone (including ganister), and other miscellaneous uses.

[9]Reported and estimated production without a breakdown by end use.

TABLE 7
COLORADO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2010,
BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	4,550	$32,700	$7.18
Plaster and gunite sands	120	1,050	8.76
Concrete products (blocks, bricks, pipe, decorative, etc.)	66	302	4.58
Asphaltic concrete aggregates and other bituminous mixtures	1,310	8,780	6.70
Road base and coverings[2]	4,960	35,600	7.18
Fill	711	2,250	3.16
Snow and ice control	114	2,170	19.00
Other miscellaneous uses[3]	364	3,810	10.47
Unspecified:[4]			
Reported	5,110	37,500	7.33
Estimated	11,600	84,900	7.30
Total or average	28,900	209,000	7.22

[1]Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.
[2]Includes road and other stabilization (cement).
[3]Includes railroad ballast.
[4]Reported and estimated production without a breakdown by end use.

TABLE 8
COLORADO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2011,
BY MAJOR USE CATEGORY[1]

Use	Quantity (thousand metric tons)	Value (thousands)	Unit value
Concrete aggregate (including concrete sand)	3,930	$28,500	$7.25
Plaster and gunite sands	351	1,860	5.30
Concrete products (blocks, bricks, pipe, decorative, etc.)	158	982	6.22
Asphaltic concrete aggregates and other bituminous mixtures	899	6,900	7.68
Road base and coverings	4,870	34,600	7.10
Road and other stabilization (cement)	36	269	7.47
Fill	1,010	3,620	3.58
Snow and ice control	136	2,790	20.51
Railroad ballast	19	199	10.47
Other miscellaneous uses	128	1,090	8.52
Unspecified:[2]			
Reported	4,770	40,000	8.39
Estimated	10,800	77,000	7.13
Total or average	27,100	198,000	7.31

[1]Data are rounded to no more than three significant digits, except unit value; may not add to totals shown.
[2]Reported and estimated production without a breakdown by end use.

TABLE 9
COLORADO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2010, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products[2]	W	W	W	W	359	$4,040
Asphaltic concrete aggregates and road base materials[3]	W	W	W	W	770	4,630
Fill	39	$173	373	$1,410	20	65
Other miscellaneous uses[4]	83	1,180	--	--	--	--
Unspecified:[5]						
Reported	1,290	10,500	1,730	16,100	--	--
Estimated	2,540	18,600	3,990	28,900	1,160	8,510
Total[6]	5,620	44,900	8,130	60,200	2,310	17,200
	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products[2]	2,150	$11,800	920	$8,320	116	$943
Asphaltic concrete aggregates and road base materials[3]	554	2,660	1,060	7,310	1,370	10,300
Fill	231	459	35	73	13	62
Other miscellaneous uses[4]	69	1,250	324	3,490	3	57
Unspecified:[5]						
Reported	625	5,990	79	206	313	2,450
Estimated	644	4,720	3,030	22,200	267	1,960
Total[6]	4,270	26,900	5,450	41,600	2,070	15,800
	Unspecified districts					
	Quantity	Value				
Concrete aggregate and concrete products[2]						
Asphaltic concrete aggregates and road base materials[3]	--	--				
Fill	--	--				
Other miscellaneous uses[4]	--	--				
Unspecified:[5]						
Reported	1,080	$2,270				
Estimated	--	--				
Total[6]	1,080	2,270				

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.

[1]Data are rounded to no more than three significant digits; may not add to totals shown.

[2]Includes plaster and gunite sands.

[3]Includes road and other stabilization (cement).

[4]Includes railroad ballast, and snow and ice control.

[5]Reported and estimated production without a breakdown by end use.

[6]District totals may not add up to the published State total, owing to revisions made after the production of the table and/or proprietary data being withheld.

TABLE 10
COLORADO: CONSTRUCTION SAND AND GRAVEL SOLD OR USED IN 2011, BY USE AND DISTRICT[1]

(Thousand metric tons and thousand dollars)

Use	District 1		District 2		District 3	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products[2]	457	5,560	890	6,430	328	3,740
Asphaltic concrete aggregates and road base materials[3]	1,470	12,700	1,540	9,510	529	3,520
Fill	104	663	675	2,370	13	71
Other miscellaneous uses[4]	104	1,950	59	748	--	--
Unspecified:[5]						
Reported	833	7,230	1,610	15,100	--	--
Estimated	2,210	16,000	3,560	25,100	1,180	8,290
Total	5,170	44,100	8,330	59,300	2,050	15,600

Use	District 4		District 5		District 6	
	Quantity	Value	Quantity	Value	Quantity	Value
Concrete aggregate and concrete products[2]	W	W	W	W	71	566
Asphaltic concrete aggregates and road base materials[3]	W	W	W	W	945	7,600
Fill	60	139	149	344	5	30
Other miscellaneous uses[4]	82	882	35	455	3	50
Unspecified:[5]						
Reported	1,330	13,400	25	161	313	2,760
Estimated	1,080	7,080	2,270	17,000	482	3,490
Total	4,690	33,000	4,370	29,900	1,820	14,500

Use	Unspecified districts	
	Quantity	Value
Concrete aggregate and concrete products[2]	--	--
Asphaltic concrete aggregates and road base materials[3]	--	--
Fill	--	--
Other miscellaneous uses[4]	--	--
Unspecified:[5]		
Reported	650	1,360
Estimated	--	--
Total	650	1,360

W Withheld to avoid disclosing company proprietary data; included in "Total." -- Zero.
[1]Data are rounded to no more than three significant digits; may not add to totals shown.
[2]Includes plaster and gunite sands.
[3]Includes road and other stabilization (cement).
[4]Includes railroad ballast, and snow and ice control.
[5]Reported and estimated production without a breakdown by end use.